See exhibit 1-1, 1-2, 1-3

EIS000209

STATEMENT OF ROBERT J. HALSTEAD ON BEHALF OF THE STATE OF NEVADA AGENCY FOR NUCLEAR PROJECTS REGARDING U.S. DEPARTMENT OF ENERGY=S DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR A GEOLOGIC REPOSITORY FOR THE DISPOSAL OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE AT YUCCA MOUNTAIN, NEVADA

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1 Spent nuclear fuel shipments to a repository will be dramatically different than past shipments in the United States. Repository shipments will be highly visible nationwide. Repository shipments will be a daily occurrence for 24 to 39 years. Repository shipments will travel predictable routes to a single destination. Repository shipments will average 2,000 miles distance and several days travel time. Repository shipments will travel through major cities on a daily basis.

These differences will create greater opportunities for terrorist attacks and/or sabotage. Moreover, a repository operated by DOE may have greater symbolic value to terrorists as a target for attack than commercial reactors and storage facilities, and that the enhanced symbolic value may extend to DOE shipments to a repository.

Since the mid-1980s, the State of Nevada has repeatedly urged DOE and NRC to reexamine the consequences of terrorism and sabotage against SNF and HLW shipments. In June 1999, the State of Nevada petitioned the NRC for rulemaking (1). [Attachment #1] Nevada's petition was based on the findings of two reports published in 1996 (2) and 1997 (3). [Attachments #2 and #3] The NRC accepted Nevada's petition and published a summary for review and comment in the Federal Register on September 13, 1999 (4). NRC has invited public comment on Nevada's petition. The comment period ends on November 29, 1999. DOE's Yucca Mountain DEIS and a supporting report by Sandia National Laboratories (5) make no reference to the Nevada reports or Nevada's petition for ruemaking.

The DEIS assumes that the current federal safeguards regulations (10 CFR Part 73) provide adequate protection against terrorist attacks. Nevada disagrees, and has petitioned the NRC to redefine the design basis threat, expand the definition of radiological sabotage, strengthen requirements for route approvals and armed escorts, adopt new rules to avoid natural disasters and civil disorders, and require all rail shipments to be made in dedicated trains. Nevada has further petitioned the NRC to conduct a comprehensive assessment of the consequences of terrorist attacks against transportation infrastructure used during nuclear waste shipments, attacks involving capture of a shipment and use of high energy explosives against a cask, and direct attacks upon shipping casks using antitank missiles.

Nevada believes that a general strengthening of the regulations and a new consequence assessment are necessary because of changes in the nature of the terrorist threat and the increased vulnerability of shipping casks. Changes in the nature of the terrorist threat include the increasing lethality of terrorist attacks in the United States (demonstrated in the World Trade Center and Oklahoma City bombings), an increase in serious terrorist attacks and threats against transportation systems, renewed concerns about nuclear terrorism generally, and specifically, terrorist actions involving potential radioactive contamination.

5... Increased vulnerability of shipping casks results from changes in the capabilities and availability of high-energy explosive devices and from changes in cask designs. Portable antitank weapons have become more powerful, more reliable, and more available worldwide since the early 1980s. Many of these weapons are capable of penetrating 20 to 40 inches of armor plate steel. Commercial shaped charges and detonation

systems developed for applications in the construction and petroleum industries are widely available. ...5 Numerous "off the shelf" military and commercial shaped charges weighing around one kilogram are capable of penetrating 10 to 20 inches of steel. It is probable that even more powerful and efficient explosives will become available during the next four decades when repository shipments are under way.

2 The new shipping casks assumed in the DEIS appear to be highly vulnerable to attacks using currently available high-energy explosive devices. The new General Atomics GA-4 and GA-9 legal-weight truck casks have a side-to-side width of 35 to 37 inches, with walls containing about 2 inches of stainless steel and 2.6 inches of depleted uranium. The DEIS provides less specific details about the new rail cask designs. The largest new rail casks will likely have designs similar to the Nuclear Assurance Corporation NAC-TSC, the Holtec HI-STAR 100, or the DOE large MPC Rail Transporter. These casks have diameters of 85 to 96 inches, with walls containing 4 to 7 inches of stainless steel and 2 to 4 inches of carbon steel or lead and depleted uranium.

Nevada believes that a successful terrorist attack on a truck cask could result in a catastrophic release of radioactive materials. Under the NRC's current design basis threat [10 CFR ' 73.1(a)(1)(i)], the definition of hand-carried equipment, in the hands of several well-trained and dedicated attackers, using a four-wheel drive vehicle to carry their equipment, includes the powerful TOW missile with tripod-mounted launcher, and the shoulder-fired or vehicle-mounted Milan missile system. The definition would also allow 150 to 200 pounds of high-energy explosives and associated detonation equipment.

Nevada believes such an attack on the GA-4/9 truck cask would likely cause complete perforation and release more than one percent of cask contents, resulting in a release at least 8,000 curies, with fission products such as Sr-90, Cs-134, and Cs-137 constituting over a third of the total curies, and Pu-241 twenty percent or more. The consequences could be much greater if the attack involved more than one missile or explosive device, or if the attack included use of an incendiary device, or if the attack were accompanied by a fire from combustion of the vehicle fuel supply or another fuel source. Such exacerbating factors could result in: (1) a potentially larger percentage release of cask contents, possibly as great as 10 percent; (2) a potentially higher percentage of respirable particulates and/or vaporized radionuclides; and (3) potentially more widespread dispersal and deposition.

Nevada's petition to the NRC requests a comprehensive consequence assessment of such an incident, using location-specific assumptions, and addressing : immediate and long-term implications for public health; environmental impacts, broadly defined; standard socioeconomic impacts, including emergency response and evacuation costs, cleanup and disposal costs, and opportunity costs to affected individuals and business; and so-called special socioeconomic impacts, including individual and collective psychological trauma, and economic losses resulting from perceptions of risk and stigma effects.

The DEIS addresses the impacts of a successful transportation sabotage event [Pp. 6-33 to 6-34] in a much more limited manner than the approach recommended by the State of Nevada. The DEIS acknowledges that an attack utilizing high-energy explosive devices could cause a significant release of radioactive materials. The DEIS used release estimates developed by Sandia National Laboratories, including an estimated respirable release six times greater than that found by previous studies (5), and the RISKIND model developed by Argonne National Laboratories. Assuming that the attack took place in an urbanized area under average weather conditions, the DEIS estimated a population dose of 31,000 person-rem and 15 fatal cancers would result from an attack on a truck cask, and 4,900 person-rem population dose and 2.4 fatal cancers would result from an attack on a rail cask. The DEIS is silent regarding any impacts other than human health effects.

3... The State of Nevada will be submitting detailed technical comments on the DEIS sabotage analysis before the end of the formal comment period. At the present time, Nevada believes the DEIS assessment of sabotage consequences is inadequate in two major respects. First, the Sandia report significantly underestimates the amount of spent fuel released from the cask(s) and the may also underestimate the

...3 fraction of the release which is a respirable aerosol. Second, the DEIS failed to consider any impacts other than direct human health effects. Nevada will also evaluate the adequacy of the RISKIND model for this type of analysis, particularly RISKIND's ability to accurately simulate near field (within 100 to 1000 meters of the attack site) particulate dispersal and deposition, with and without fire effects.

4 Nevada will prepare a detailed critique of the Sandia analysis as part of our final written comments. Based on preliminary reviews, the Sandia analysis appears to significantly underestimate the potential release and respirable fraction for the following reasons:

a. Sandia failed to consider attack scenarios using more than one high-energy explosive device

b. Sandia failed to consider attack scenarios using an incendiary device in conjunction with a high-energy explosive device

c. Sandia ignored information suggesting that the M3A1 military demolition device could perforate a truck cask

d. Sandia failed to consider commercial shaped charges, which are more efficient metal penetrators than the M3A1 military demolition device

e. Sandia failed to consider the full range of portable antitank weapons such as the TOW missile, which meet the NRC design basis threat definition but which are too heavy to meet the U.S. Army definition of man-portability

f. Sandia should have assumed full perforation for purposes of conservatism, and using its own assumptions, increased the estimate of respirable material by a factor of 10

g. Sandia used a "swept volume" method of estimating the release, which is subject to alternative interpretations, especially when coupled with blast temperature effects

h. Sandia apparently did not consider the potential contribution of fuel oxidation to generation of respirable fines in instances where cask perforation occurs

i. Sandia used only computer simulations and 1980s experimental data to evaluate cask response to the explosive devices; no new tests were performed

j. Sandia used a computer code, SCAP, which is not appropriately benchmarked for modeling multi-layer cask walls composed of different numbers of layers, different thickness, and different materials combinations

END NOTES

1. Petition to Iniatiate Rulemaking and to Initiate a Comprehensive Assessment, dated June 22, 1999. The petition can be found on the web at http://www.state.nv.us/nucwaste/news/ag990622b.htm.

2. James David Ballard, A Preliminary Study of Sabotage and Terrorism as Transportation Risk Factors Associated with the Proposed Yucca Mountain High-Level Nuclear Waste Facility, NWPO-TN-018-96, Published by State of Nevada Agency for Nuclear Projects, September, 1997. The report can be found on the web at http://www.state.nv.us/nucwaste/trans/jballard.htm.

3. Robert J. Halstead and James David Ballard, Nuclear Waste Transportation Security and Safety Issues: The Risk of Terrorism and Sabotage Against Repository Shipments, Prepared for State of Nevada Agency for Nuclear Projects, October, 1997 [Revised December, 1998]. The report can be found on the web at http://www.state.nv.us/nucwaste/trans/risk01.htm.

4. "State of Nevada: Receipt of Petition for Rulemaking," Federal Register, September 13, 1999 (Vol. 64, No. 176), Pp. 49410 – 49413. The notice can be found on the web at http://www.state.nv.us/nucwaste/news/fr13se99-30.htm.

5. R.E. Luna, K.S. Neuhauser, and M.G. Vigil, Projected Source Terms for Potential Sabotage Events Related to Spent Fuel Shipments to a Yucca Mountain High Level Waste Repository, SAND99-0963, Prepared by Sandia National Laboratories, June, 1999.